

The "Practical" Carpentry Estimator

TABLE OF BOARD MEASURE

Giving Contents in Feet of Joists, Scantlings and Timbers

Size in Inches	Length in Feet										
	10	12	14	16	18	20	22	24	26	28	30
3x 4	10	12	14	16	18	20	22	24	26	28	30
3x 6	15	18	21	24	27	30	33	36	39	42	45
3x 8	20	24	28	32	36	40	44	48	52	56	60
3x10	25	30	35	40	45	50	55	60	65	70	75
3x12	30	36	42	48	54	60	66	72	78	84	90
3x14	35	42	49	56	63	70	77	84	91	98	105
4x 4	13	16	19	21	24	27	29	32	35	37	40
4x 6	20	24	28	32	36	40	44	48	52	56	60
4x 8	27	32	37	43	48	53	59	64	69	75	80
4x10	33	40	47	53	60	67	73	80	87	93	100
4x12	40	48	56	64	72	80	88	96	104	112	120
4x14	47	56	65	75	84	93	103	112	121	131	140
6x 6	30	36	42	48	54	60	66	72	78	84	90
6x 8	40	48	56	64	72	80	88	96	104	112	120
6x10	50	60	70	80	90	100	110	120	130	140	150
6x12	60	72	84	96	108	120	132	144	156	168	180
6x14	70	84	98	112	126	140	154	168	182	196	210
6x16	80	96	112	128	144	160	176	192	208	224	240
8x 8	53	64	75	85	96	107	117	128	139	149	160
8x10	67	80	93	107	120	133	147	160	173	187	200
8x12	80	96	112	128	144	160	176	192	208	224	240
8x14	93	112	131	149	168	187	205	224	243	261	280
8x16	107	128	149	171	192	213	235	256	277	298	320
10x10	83	100	117	133	150	167	183	200	217	233	250
10x12	100	120	140	160	180	200	220	240	260	280	300
10x14	117	140	163	187	210	233	257	280	303	327	350
10x16	133	160	187	218	240	267	293	320	347	373	400
12x12	120	144	168	192	216	240	264	288	312	336	360
12x14	140	168	196	224	252	280	308	336	364	392	420
12x16	160	192	224	256	288	320	352	384	416	448	480
14x14	163	196	229	261	294	327	359	392	425	457	490
14x16	187	224	261	299	336	373	411	448	485	523	560
14x18	210	252	294	336	378	420	462	504	546	588	630
14x20	233	280	327	373	420	467	513	560	607	653	700
16x16	213	256	299	341	384	427	469	512	555	597	640
16x18	240	288	336	384	432	480	528	576	624	672	720
16x20	267	320	373	425	480	533	587	640	693	747	800
18x18	270	324	378	432	486	540	594	648	702	756	810
18x20	300	360	420	480	540	600	660	720	780	840	900
20x20	333	400	467	533	600	667	733	800	867	933	1000

LINEAL FOOT TABLE OF BOARD MEASURE

Number of Feet of Lumber, B. M., per Lineal Foot of Any Size

2" x 4" = 0.667	4" x 4" = 1.333	8" x 14" = 9.333
2" x 6" = 1.	4" x 6" = 2.	8" x 16" = 10.667
2" x 8" = 1.333	4" x 8" = 2.667	10" x 10" = 8.333
2" x 10" = 1.667	4" x 10" = 3.333	10" x 12" = 10.
2" x 12" = 2.	4" x 12" = 4.	10" x 14" = 11.667
2" x 14" = 2.333	4" x 14" = 4.667	10" x 16" = 13.333
2" x 16" = 2.667	4" x 16" = 5.333	10" x 18" = 15.
2 1/2" x 12" = 2.5	6" x 6" = 3.	12" x 12" = 12.
2 1/2" x 14" = 2.917	6" x 8" = 4.	12" x 14" = 14.
2 1/2" x 16" = 3.333	6" x 10" = 5.	12" x 16" = 16.
3" x 6" = 1.5	6" x 12" = 6.	12" x 18" = 18.
3" x 8" = 2.	6" x 14" = 7.	14" x 14" = 16.333
3" x 10" = 2.5	6" x 16" = 8.	14" x 16" = 18.667
3" x 12" = 3.	8" x 8" = 5.333	14" x 18" = 21.
3" x 14" = 3.5	8" x 10" = 6.667	16" x 16" = 21.333
3" x 16" = 4.	8" x 12" = 8.	16" x 18" = 24.

TABLE OF BOARD MEASURE

Giving Contents in Feet of Joists, Scantlings and Timbers

Size in Inches	10	12	14	16	Length in Feet		18	20	22	24	26	28	30
1 x 2	12 2/3	2	21 1/3	22 2/3	3	3 1/3	.....	.....	.....	.....	.....	.....	.....
1 x 3	21 1/2	3	31 1/2	4	4 1/2	5	.....	.....	.....	.....	.....	.....	.....
1 x 4	31 1/3	4	42 2/3	5 1/3	6	6 2/3	.....	.....	.....	.....	.....	.....	.....
1 x 6	5	6	7	8	9	10	.....	.....	.....	.....	.....	.....	.....
1 x 8	6 2/3	8	9 1/3	10 2/3	12	13 1/3	.....	.....	.....	.....	.....	.....	.....
1 x 10	8 1/3	10	11 2/3	13 1/3	15	16 2/3	.....	.....	.....	.....	.....	.....	.....
1 x 12	10	12	14	16	18	20	.....	.....	.....	.....	.....	.....	.....
1 1/4 x 4	4 1/6	5	5 5/6	6 2/3	7 1/2	8 1/3	.....	.....	.....	.....	.....	.....	.....
1 1/4 x 6	6 1/4	7 1/2	8 3/4	10	11 1/4	12 1/2	.....	.....	.....	.....	.....	.....	.....
1 1/4 x 8	8 1/3	10	11 2/3	13 1/3	15	16 2/3	.....	.....	.....	.....	.....	.....	.....
1 1/4 x 10	10 5/12	12 1/2	14 7/12	16 2/3	18 3/4	20 5/8	.....	.....	.....	.....	.....	.....	.....
1 1/4 x 12	12 1/2	15	17 1/2	20	22 1/2	25	.....	.....	.....	.....	.....	.....	.....
1 1/2 x 4	5	6	7	8	9	10	.....	.....	.....	.....	.....	.....	.....
1 1/2 x 6	7 1/2	9	10 1/2	12	13 1/2	15	.....	.....	.....	.....	.....	.....	.....
1 1/2 x 8	10	12	14	16	18	20	.....	.....	.....	.....	.....	.....	.....
1 1/2 x 10	12 1/2	15	17 1/2	20	22 1/2	25	.....	.....	.....	.....	.....	.....	.....
1 1/2 x 12	15	18	21	24	27	30	.....	.....	.....	.....	.....	.....	.....
2 x 2	3 1/3	4	4 2/3	5 1/3	6	6 2/3	.....	.....	.....	.....	.....	.....	.....
2 x 3	5	6	7	8	9	10	11	12	13	14	15	.....	.....
2 x 4	7	8	9	11	12	13	15	16	17	19	20	.....	.....
2 x 6	10	12	14	16	18	20	22	24	26	28	30	.....	.....
2 x 8	13	16	19	21	24	27	29	32	35	37	40	.....	.....
2 x 10	17	20	23	27	30	33	37	40	43	47	50	.....	.....
2 x 12	20	24	28	32	36	40	44	48	52	56	60	.....	.....
2 x 14	23	28	33	37	42	47	51	56	61	65	70	.....	.....

WALL BOARD

Sizes and Covering Capacity of Wall Board

Width in Inches	Length in Feet	No. Sq. Ft. Each Sheet	Width in Inches	Length in Feet	No. Sq. Ft. Each Sheet
32	6	16	48	9	36
32	7	18 $\frac{2}{3}$	48	10	40
32	8	21 $\frac{1}{3}$	48	12	48
32	9	24	48	14	56
32	10	26 $\frac{2}{3}$	48	16	64
32	12	32	64	6	32
32	14	37 $\frac{1}{3}$	64	7	37 $\frac{1}{3}$
32	16	42 $\frac{2}{3}$	64	8	42 $\frac{2}{3}$
48	6	24	64	9	48
48	7	28	64	10	53 $\frac{1}{3}$
48	8	32	64	12	64

When covering joints of Sheet Rock and other "plaster" wall boards, figure about 1 lb. finisher for 500 sq. ft. board. Use 3d com. nails, cement coated preferred.

Data on Wire Nails

Size of Nails	Length of Nails Inches	Gauge Number	Approximate Number to Pound	Advance Over Base Price, per 100 Lbs.
2d.....	1	15	876	\$0.70
3d.....	1 $\frac{1}{4}$	14	568	.45
4d.....	1 $\frac{1}{2}$	12 $\frac{1}{2}$	316	.30
5d.....	1 $\frac{3}{4}$	12 $\frac{1}{2}$	271	.30
6d.....	2	11 $\frac{1}{2}$	181	.20
7d.....	2 $\frac{1}{4}$	11 $\frac{1}{2}$	161	.20
8d.....	2 $\frac{1}{2}$	10 $\frac{1}{4}$	106	.10
9d.....	2 $\frac{3}{4}$	10 $\frac{1}{4}$	96	.10
10d.....	3	9	69	.05
12d.....	3 $\frac{1}{4}$	9	63	.05
16d.....	3 $\frac{1}{2}$	8	49	.05
20d.....	4	6	31	Base
30d.....	4 $\frac{1}{2}$	5	24	Base
40d.....	5	4	18	Base
50d.....	5 $\frac{1}{2}$	3	14	Base
60d.....	6	2	11	Base

Nails Required for Carpenter Work

Kind of Framing	Size Nails	Lbs. per 1,000 Ft. B. M.	Lbs. per 100 Sq. Ft.	Lbs. per 100 Lin. Ft.
Bevel Siding.....	6d	20	1 $\frac{3}{4}$	...
Wood studs 16" o.c. . .	12-16d	25	2	...
Wood studs 12" o.c. . .	12-16d	30	2 $\frac{1}{2}$	...
Furring strips.....	8d	40	1 $\frac{1}{2}$	2 $\frac{2}{3}$
Furring strips.....	10d	60	3 $\frac{1}{4}$	1
Wood grounds.....	6d	70	...	2 $\frac{2}{3}$
Wood grounds.....	8d	110	...	1

WALL BOARD

Estimating wall board is more of a task than merely obtaining the number of sq. ft. of surface to be covered. A rough sketch should be made of each room, showing an elevation of each wall and the ceiling plan. This will enable you to figure the number of pieces of wall board required, size of each, lin. ft. of "headers" or nailing strips required, number of lin. ft. of panel strips, etc. Each room should be laid out to obtain certain panel effects, as the design of the panels will govern the amount of cutting and fitting necessary.

"Headers" or Nailing Strips for Wall Board

When placing "headers" or nailing strips for wall board, figure 250 to 300 lin. ft. per 8-hr. day with joists or studs 16" on centers and 200 to 225 lin. ft. with studs and joists 12" centers.

Labor Placing Wall Board

The actual labor cost of placing wall board will vary with size and shape of room, whether full size sheets may be used or considerable cutting and fitting necessary. It requires practically as much time to place a 16" x 84" sheet as one 32" x 84", and the latter contains twice as many sq. ft. as the former.

On straight work in large rooms, a carpenter should fit and place, ready to receive panel strips, 500 to 600 sq. ft. per 8-hr. day, but in small rooms requiring considerable cutting and fitting around doors, windows, etc., figure 300 to 350 sq. ft. per 8-hr. day.

On an average it requires 20 to 30 min. to fit and place 1 pc. of wall board. After the job has been figured on a sq. ft. basis, check up number of pcs. and see how it compares.

Labor Placing Wood Panel Strips

The labor cost placing wood panel strips over wall board will vary with style of panel strip used, whether 1, 2 or 3 members, length of panels and the design.

On straight work, using a lattice panel strip $\frac{5}{16}$ " x $1\frac{1}{4}$ " or $\frac{5}{16}$ " x $2\frac{1}{4}$ ", a carpenter should place 400 to 500 lin. ft. per 8-hr. day. On more complicated work using top and intermediate panel rails, a carpenter should place 300 to 350 lin. ft. per 8-hr. day.

If a 3-mem. panel strip is used in fairly plain wall and ceiling designs, a carpenter should place 160 to 200 lin. ft. per 8-hr. day.

When placing wood ceiling beams, cornices, plate rails, etc., consisting of several built-up members, a carpenter should place about 200 lin. ft. of each member per 8-hr. day.

Applying Wall Board Over Old Plastered Walls and Ceilings

In remodeling work, where plaster board is applied over old walls and ceilings, it is advisable to remove the old plaster. This seldom costs over \$5 or \$6 per room.

To obtain a first class job it is recommended that furring strips be placed over old plastered walls, as this will straighten the walls and provide a much better base for nailing.

Nails Required for Wall Board

With nails spaced 8" centers, figure about 1-lb. per 100 sq. ft.

WOOD FLOORING

Estimating Quantities of Wood Flooring

Measured Size Inches	Finished Size Inches	No. of Pieces in Bundle	Add for Waste Per Cent	To Obtain Quan. Flooring Required Multiply Area by	No. Ft. Flg. Req. for 100 Sq. Ft. Floor
1x2	$\frac{3}{8} \times 1\frac{1}{2}$	24	33 $\frac{1}{3}$	1 $\frac{1}{6}$ or 1.33	133
1x2 $\frac{1}{2}$	$\frac{3}{8} \times 2$	16	25	1 $\frac{1}{4}$ or 1.25	125
1x2 $\frac{1}{4}$	$\frac{13}{16} \times 1\frac{1}{2}$	12	50 $\frac{1}{3}$	1 $\frac{1}{2}$ or 1.50	150
1x2 $\frac{3}{4}$	$\frac{13}{16} \times 2$	8	37 $\frac{1}{2}$	1 $\frac{3}{8}$ or 1.375	137 $\frac{1}{2}$
1x3	$\frac{13}{16} \times 2\frac{1}{4}$	8	33 $\frac{1}{3}$	1 $\frac{1}{3}$ or 1.33	133
1x4	$\frac{13}{16} \times 3\frac{1}{4}$	6	25	1 $\frac{1}{4}$ or 1.25	125
1x1	$\frac{3}{8} \times \frac{7}{8}$	24	162 $\frac{2}{3}$	1 $\frac{1}{6}$ or 1.17	117

Amount of Surface 1,000 Ft. of Flooring Will Cover and Quantity of Nails Required to Lay It

Size Flooring	How Measured	Will Cover Sq. Ft. Fl.	Nailed Every
$\frac{3}{8} \times 1\frac{1}{2}$	1x2	750	8 in.
$\frac{3}{8} \times 2$	1x2 $\frac{1}{2}$	800	8 in.
$\frac{13}{16} \times 1\frac{1}{2}$	1x2 $\frac{1}{4}$	667	16 in.
$\frac{13}{16} \times 2$	1x2 $\frac{3}{4}$	727	16 in.
$\frac{13}{16} \times 2\frac{1}{4}$	1x3	750	16 in.
$\frac{13}{16} \times 3\frac{1}{4}$	1x4	800	16 in.

Size Flooring	Lbs. Nails Required	Kind of Nails
$\frac{3}{8} \times 1\frac{1}{2}$	12	3d Fin.
$\frac{3}{8} \times 2$	10	3d Fin.
$\frac{13}{16} \times 1\frac{1}{2}$	52	8d Cut Flg. Brads
$\frac{13}{16} \times 2$	42	8d Cut Flg. Brads
$\frac{13}{16} \times 2\frac{1}{4}$	39	8d Cut Flg. Brads
$\frac{13}{16} \times 3\frac{1}{4}$	29	8d Cut Flg. Brads

Labor Laying and Finishing 100 Sq. Ft. Wood Floors

Class or Work	Ordinary Laying	Workmanship	Finishing
	Carp. Hours	Labor Hours	Carp. Hours
3 $\frac{1}{4}$ " face softwood.	15 $\frac{5}{8}$	1 $\frac{1}{2}$	2 $\frac{1}{4}$
2 $\frac{1}{4}$ " face, fact. maple.	2	1 $\frac{1}{2}$	3
2 $\frac{1}{4}$ " face hardwood.	2 $\frac{7}{8}$	1 $\frac{1}{2}$	3
Exper. Floorlayer.	2	1 $\frac{1}{2}$	2
1 $\frac{1}{2}$ " face fact. maple.	2 $\frac{1}{4}$	2 $\frac{3}{8}$	3
1 $\frac{1}{2}$ " face hardwood.	4 $\frac{1}{2}$	3 $\frac{1}{4}$	3
Exper. Floorlayer.	3 $\frac{1}{8}$	3 $\frac{1}{4}$	2
Finishing $\frac{1}{4}$ -sawed oak floors. .	...	..	5 $\frac{1}{4}$
Exper. Floorlayer. ....	...	..	3 $\frac{1}{2}$

Labor Laying and Finishing 100 Sq. Ft. Wood Floors

Class of Work	First Class Laying	Workmanship	Finishing
	Carp. Hours	Labor Hours	Carp. Hours
2 $\frac{1}{4}$ " face hardwood.	3 $\frac{3}{4}$	1 $\frac{1}{2}$	5 $\frac{1}{2}$
Exper. Floorlayer.	2 $\frac{3}{8}$	1 $\frac{1}{2}$	3 $\frac{1}{3}$
1 $\frac{1}{2}$ " face hardwood.	6	3 $\frac{1}{4}$	5 $\frac{1}{2}$
Exper. Floorlayer.	4 $\frac{1}{4}$	3 $\frac{1}{4}$	3 $\frac{1}{3}$
Finishing $\frac{1}{4}$ -sawed oak floors. .	...	..	8
Exper. Floorlayer. ....	...	..	5 $\frac{1}{2}$
Very best grade of Finishing. .	...	..	11
Exper. Floorlayer. ....	...	..	8

Quantity of Bevel and Drop Siding Required per 100 Sq. Ft. of Wall

Width Siding Inches	Distance to Weather Inches	Add for Waste %	To Obtain Quantity of Siding Multiply Surf. Meas. by	Quantity Siding Req. 100 Sq. Ft. Surf.
6.....	5	20	1.20	120 feet
6.....	4 $\frac{3}{4}$	27	1.27	127 feet
6.....	4 $\frac{1}{2}$	33	1.33	133 feet
4.....	2 $\frac{3}{4}$	46	1.46	146 feet
4.....	2 $\frac{1}{2}$	60	1.60	160 feet

Labor Placing Bevel or Lap Siding, Drop Siding, M. & B. Ceiling and Wainscoting on 1 Sq. (100 Sq. Ft.) Surface

Description of Work	Carp. Hours	Labor Hours
Drop Siding (rough ends).....	1 $\frac{1}{2}$	1 $\frac{1}{2}$
Drop siding (fitted ends).....	2 $\frac{1}{2}$	5 $\frac{8}{8}$
4" bevel or lap siding (2 $\frac{3}{4}$ " to weather).....	3 $\frac{3}{4}$	3 $\frac{4}{4}$
4" bevel or lap siding (2 $\frac{1}{2}$ " to weather).....	4 $\frac{1}{6}$	4 $\frac{5}{5}$
6" bevel or lap siding (4 $\frac{3}{4}$ " to weather).....	2 $\frac{1}{4}$	5 $\frac{8}{8}$
6" bevel or lap siding (4 $\frac{1}{2}$ " to weather).....	2 $\frac{1}{3}$	2 $\frac{3}{3}$
4" M. & B. ceiling.....	3	2 $\frac{3}{3}$
M. & B. wainscot and partition.....	5	.....

Wood Door Bucks

	Carp. Hours
3'x7' buck without transom, making.....	1
Labor setting.....	1 $\frac{1}{4}$ —1 $\frac{1}{2}$
5'x7' to 8'x8' buck, making.....	1
Labor setting.....	1 $\frac{1}{4}$ —1 $\frac{1}{2}$
3'x9' buck with transom, making.....	1 $\frac{1}{4}$ —1 $\frac{1}{2}$
Labor setting.....	1 $\frac{1}{4}$
5'x9' to 7'x10' with transom, making.....	1 $\frac{1}{2}$ —2
Labor setting.....	1 $\frac{1}{4}$ —1 $\frac{1}{2}$
Rough bucks for borrowed lights.....	1—1 $\frac{1}{2}$

WOOD FLOORING

Surfacing Wood Floors by Machine

In small rooms, such as average house, apartment or office, figure 90 to 100 sq. ft. of floor an hr. and allow about $\frac{1}{2}$ hr. hand finishing per 100 sq. ft. floor, around edges of rooms, etc.

In large store rooms, lofts, etc., machine with operator should finish 125 to 150 sq. ft. of floor an hr. and allow about $\frac{1}{2}$ hr. hand finishing per 100 sq. ft.

Where first class workmanship is required, such as ball rooms, etc., figure 60 to 70 sq. ft. of floor an hr. and $\frac{1}{2}$ hr. hand finishing per 100 sq. ft.

Where old floors are to be resurfaced, including removal of old finish, grease, dirt, etc., a machine and operator should resurface 100 to 110 sq. ft. an hr.

On all of the above it will be necessary to include machine sander rental or cost, electric current, machine operator and hand finishing.

ESTIMATING CARPENTRY

All classes of rough carpentry such as floor joists, ceiling joists, roof rafters, stud partitions, etc., are estimated by the 1,000 ft. of lumber, b. m.

WOOD JOISTS

When estimating wood joists, always allow 4" to 6" on each end of the joist for bearing on the wall.

To obtain the number of joists required for any floor, take the length of the floor in feet and divide by the distance the joists are spaced apart, then add 1 to allow for the extra joist required at end of span.

Example: If the floor is 28 ft. long and 15 ft. wide, it will require 16-ft. joists to allow for wall bearing at each end. Assuming the joists are spaced 16" on centers, one joist will be required every 16" or every $1\frac{1}{3}$ ft. In other words it will require $\frac{3}{4}$ as many joists as the length of the span, plus one. Three-quarters of 28 equal 21, plus 1 extra joist at end, makes 22 joists 16 ft. long for this space.

The following table gives the number of joists required for any spacing:

Number of Wood Floor Joists Required for any Spacing

Distance Joists are Placed on Centers	Multiply Length of Floor Span by	Add Joists	Distance Joists are Placed on Centers	Multiply Length of Floor Span by	Add Joists
12 inches.....	1	1	36 inches.....	$\frac{1}{3}$	1
16 inches.....	$\frac{3}{4}$	1	42 inches.....	$\frac{2}{7}$	1
20 inches.....	$\frac{3}{5}$	1	48 inches.....	$\frac{1}{4}$	1
24 inches.....	$\frac{1}{2}$	1	54 inches.....	$\frac{2}{9}$	1
30 inches.....	$\frac{2}{5}$	1	60 inches.....	$\frac{1}{5}$	1

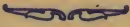
Feet of Lumber B. M., Required to Cover 100 Sq. Ft. Surface When Used for Studs, Joists, Rafters, Wall and Floor Furring, etc.

Size Lumber Inches	12-inch Centers	16-inch Centers	20-inch Centers	24-inch Centers
1x 2.....	$16\frac{2}{3}$	$12\frac{1}{2}$	10	$8\frac{1}{3}$
2x 2.....	$33\frac{1}{3}$	25	20	$16\frac{2}{3}$
2x 4.....	$66\frac{2}{3}$	50	40	$33\frac{1}{3}$
2x 5.....	$83\frac{1}{3}$	$62\frac{1}{2}$	50	$41\frac{2}{3}$
2x 6.....	100	75	60	50
2x 8.....	$133\frac{1}{3}$	100	80	$66\frac{2}{3}$
2x10.....	$166\frac{2}{3}$	125	100	$83\frac{1}{3}$
2x12.....	200	150	120	100
2x14.....	$233\frac{1}{3}$	175	140	$116\frac{2}{3}$
3x 6.....	150	$112\frac{1}{2}$	90	75
3x 8.....	200	$133\frac{1}{3}$	120	100
3x10.....	250	$187\frac{1}{2}$	150	125
3x12.....	300	225	180	150
3x14.....	350	$262\frac{1}{2}$	210	175

The above table does not include any allowance for waste in cutting, doubling of joists under partitions or at stair wells, extra joist at the end of each span, etc., as these items vary with each job. Add as required for your job.

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Containing in Tabular Form Complete Material Quantities and Labor Hours Necessary to Estimate All Classes of Carpentry Work



An Invaluable Guide for Estimators, Carpenters, Contractors, Lumber Dealers and Others Interested in Estimating Carpentry Costs Accurately

By

FRANK R. WALKER


Author of

The Building Estimator's Reference Book
Practical Accounting and Cost Keeping for Contractors

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